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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,855	11/12/2003	John Warren Maly	200208463-1	8646

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EXAMINER	
SILVER, DAVID	

ART UNIT	PAPER NUMBER
2128	

NOTIFICATION DATE	DELIVERY MODE
09/19/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/712,855	MALY ET AL.	
	Examiner	Art Unit	
	DAVID SILVER	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8,10-16 and 18-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8,10-16 and 18-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 6-7, 9, and 17 were cancelled and therefore withdrawn from consideration.

2. Claims 1-5, 8, 10-16, and 18-20 are currently pending in Instant Application.

3. The Instant Application is not currently in condition for allowance.

Priority

4. Priority is not claimed **(11/12/2003)**.

Response to Arguments

Response: 35 U.S.C. § 101

5. **Applicants argue:**

5.1 "The Examiner on page 3 of the Office Action states that the steps of the method claims do not produce a useful, tangible, and concrete result. The Examiner further argues that the absence of a result does not indicate a result (pg. 2, Office Action). Applicants respectfully disagree.

5.2 Since it is clearly indicated that when any error occurs a signal indicates an error, it is also clearly communicated that in the absence of a signal no error has occurred. In this context, the state when no error signal is communicated is a final result that is tangible. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 1-5, 8 and 10-14 under 35 U.S.C. § 101." (Remarks: page 8)

6. **Examiner Response:**

6.1 Applicants' arguments have been fully considered but are unpersuasive. Strictly speaking, the conditional statement "if there is an error then signal" does not mean that "if there is no error then do not signal". Applicants' claim language is, however, broader than that, as the statement is an "if" and not "if and only if", which they appear to argue. The only equivalent that can be clearly communicated from the initial statement is, "if there is no signal, then there is no error". This, again, does not mean that if there is no error, then do not signal. Furthermore, as detailed in the Previous Office Action (sections 10 and 10.1), the claims do not recite a tangible final result. The lack of a result 1) does not mean that no error occurred and 2) does not produce a tangible result that the

user can recognize as a being a result. Accordingly, the rejection is maintained.

Response: 35 U.S.C. § 103

7. **Applicants argue:**

7.1 "Applicants continue to believe that the claims are allowable at least for the reasons set forth in the previous response, including that Sharma does not disclose or suggest determining whether generation of an event by an agent in response to a stimulus is conditional. [...]
Neither Sharma nor Dubey either together or individually teach or suggest that speculative expectations are created and then either promoted or deleted. Please note that the speculative expectation of the claims is not merely a step in a verification process at which conditions indicate that some event may take place in the future, such as the indication that a memory transaction has been received and determining whether that memory transaction is a fetch or a prefetch operation. For example, claim 1 recites detecting a stimulus, creating an expectation, indicating that the expectation is speculative, then promoting or deleting the expectation, and finally verifying whether any event related to the promoted or deleted expectation occurred properly." (Remarks: page 9-10; emphasis by Examiner)

8. **Examiner Response:**

8.1 These arguments were presented originally in Remarks dated 11/08/2007 on pages 10-11 and were indicated as being moot in view of new grounds of rejection. These arguments remain moot and will not be addressed as they do not apply to the presented rejections.

9. **Applicants argue:**

9.1 "The Examiner admits, on page 4 of the Office Action, that Sharma does not explicitly disclose: converting said speculative expectation to a non-speculative expectation if the conditions indicate that said event should be generated by said agent; deleting said speculative expectation if said conditions indicate that said event should not be generated by said agent. The Examiner further states that Dubey however discloses an analogous caching memory system having said features of

converting and deleting. (pg. 4, Office Action).

9.2 Applicants respectfully disagree with the Examiner that Dubey discloses an analogous caching memory system having said features of converting and deleting. Nowhere in Dubey are the features "converting" or "deleting" mentioned let alone described with respect to a caching memory system. Furthermore, Dubey does not teach or suggest converting a speculative expectation to a non-speculative expectation if the conditions indicate that an event should be generated by an agent. Dubey does not teach or suggest deleting a speculative expectation if the conditions indicate that an event should not be generated by an agent.

9.3 In addition, Applicants believe that the caching memory system of Dubey is not analogous to the expectation based event verification of this application. Dubey describes a central processing unit (CPU) in a computer that permits speculative parallel execution of more than one instruction thread (See Abstract). This invention teaches creating an expectation of an event, indicating that it is speculative, monitoring conditions relating to the event and either promoting the speculative expectation to a non-speculative expectation or deleting it, and finally determining whether the non-speculative event occurred and making sure the event for a deleted expectation did not occur. This method is used for verification of an agent, not actual operation of a CPU."

10. **Examiner Response:**

10.1 In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). On page 11 the Applicants are attacking the combination of Sharma and Dubey by attacking solely the Dubey reference. Furthermore, not just the portions cited should be considered when reviewing the references. Attention is directed to, **(col: 19 line: 56-64)**, which recites: " Every branch resolution (i.e., the determination of whether a conditional branch is taken or not, and the associated target address) during a thread execution is communicated to the TM unit. The TM unit uses this information to determine if a future thread

forked to the incorrect branch address, and any dependent threads, need to be discarded. This enables simultaneous execution of control dependent blocks of instructions, as illustrated later." This means that the conditional statement (the branch), for taken (even should be generated) would use the future threads (cached), versus, if the branch (conditional event) is not taken, the future threads are discarded (because it is determined that the even should not be generated). This is the conversion / deletion of the speculative event (future thread choice). The conversion is an inherent property of the future elements being used, and the deletion is the discarding of the future elements. The combination of these features with the verification aspects of the Sharma reference yield the claimed invention.

10.2 In response to applicant's argument that Dubey is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, 1) Dubey discloses a mechanism for speeding up processing by predetermining possible future results based on conditional events (branches). When a branch is taken the predicted future even is used, when it is not taken, it is discarded. The claimed invention performs the identical tasks, but with more general terms and a broader meaning. Therefore, indeed Dubey is drawn to analogous art. The rejection is therefore maintained.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-5, and 8, 10-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

MPEP 2106 recites, in part:
"...USPTO personnel shall review the claim to determine it produces a useful, tangible, and concrete result. In making this determination, the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather on whether the *final* result achieved by the claimed invention is "useful, tangible, and concrete."

MPEP 2106 recites, in part,

"a claim that can be read so broadly as to include statutory and nonstatutory subject matter must be amended to limit the claim to a practical application. In other words, if the specification discloses a practical application of a section 101 judicial exception, but the claim is broader than the disclosure such that it does not require a practical application, then the claim must be rejected".

11.1 The steps of the method claims do not produce a useful, tangible, and concrete result. If the specification discloses a practical application of a section 101 judicial exception, but the claim is broader than the disclosure such that it does not require a practical application, then the claim must be rejected. The signaling is conditional on whether an event was not appropriately generated. When it was appropriately generated then there is no signaling and the claims are drawn to non-statutory subject matter. Additionally, see section "Response: 35 U.S.C. § 101" above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1-5, 8, 10-16, 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma **(USP 6,412,046)**, and in view of Dubey **(USP 5,812,811)**.

Sharma discloses: 1. A computer implemented method of verifying events generated by an agent, said method comprising:

detecting a stimulus at an input of said agent; determining whether generation of an event by said agent in response to said stimulus is conditional **(col: 3 line: 14-25; col: 2 line: 48-59)**; creating an expectation of said event based at least in part on said stimulus, wherein said agent is expected to generate said event **(col: 1 line: 17-20; col: 4 line: 49-64; Fig 4, 5, 6 and description col: 2 line: 48-59)**;

indicating that said expectation is speculative if said generation of said event is conditional, so that said expectation is a speculative expectation **(col: 2 line: 48-59; col: 7 line: 42-49; Fig 5 item 500 and Figure's description)**,

verifying whether said event was appropriately generated by said agent; and signaling an error if said event was not appropriately generated by said agent **(col: 7 line: 1-5)**.

Sharma does not however explicitly disclose: converting said speculative expectation to a non-speculative expectation if conditions indicate that said event should be generated by said agent; deleting said speculative expectation if said conditions indicate that said event should not be generated by said agent **(col: 1 line: 20-25)**.

Dubey however discloses an analogous caching memory system having the said feature of converting and deleting **(col: 11 line: 59-65; col: 23 line: 11-17; col: 3 line: 14-26; col: 1 line: 58-60; col: 2 line: 60-67; col: 4 line: 16-21; Fig 4, 5 and descriptions)**.

Sharma further discloses the following with rationale provided below: if said speculative expectation was converted to a non-speculative expectation, verifying whether said non-speculative event was generated by said agent; signaling an error if said non-speculative event was not generated by said agent; if said speculative expectation was deleted, verifying whether said deleted speculative expectation was generated by said agent and signaling an error if said deleted speculative expectation was generated by said agent **(Sharma: col: 4 line: 1-11; col: 7 line: 1-5)**.

In view of KSR v. Teleflex, Sharma's base device and Dubey's device are comparable cache memory systems. One of ordinary skill could have applied the known improvement of discarding expectation when the system "knew" (based on conditions) that such events would not occur, and, "promoting" from speculative to non-speculative (making certain) that events should be generated, in such way to the base device that the results would have been predictable. Sharma verifies the expectations and events **(Sharma: col: 7 line: 1-5)** and therefore properly verify the creation / deletion of the said speculative expectations.

It would have been further obvious to verify the "promotion" / "deletion" of speculative events because this verifies the cache memory system's operations in a more realistic and complete manner; thus, saving time and money associated with creating products that are not fully and adequately tested and may produce errors.

Sharma discloses: 2. The method of claim 1, said determining whether said generation of said event is conditional comprises determining that said generation is conditional if said stimulus is a response containing an unmodified copy of requested data and other sources accessible by said agent may contain a modified copy of said requested data **(col: 1 line: 20-25 "stale copy")**.

Sharma discloses: 3. The method of claim 1, said determining whether said generation of said event is conditional comprises determining that said generation is conditional if said stimulus comprises a local read request response by a memory local to said agent **(Fig 4, 5, 6 and description; col: 4 line: 1-11)**.

Sharma discloses: 4. The method of claim 1, further comprising determining whether said event is expected based at least in part on said stimulus before creating said expectation of said event **(Fig 4, 5, 6 and description; Fig 5 description)**.

Sharma discloses: 5. The method of claim 1, further comprising determining whether snoop responses have been received by said agent before said determining whether said generation is conditional **(Fig 4, 5, 6 and description; Fig 5 description)**.

Sharma discloses: 6. The method of claim 5, wherein said determining whether enough information has been received comprises determining whether all snoop responses have been received by said agent **(col: 3 line: 14-26; col: 1 line: 58-60; col: 2 line: 60-67; col: 4 line: 16-21)**.

Sharma discloses: 8. The method of claim 7, wherein said conditions indicating that said event should be generated by said agent comprise said agent receiving all expected snoop responses, said expected snoop responses containing no modified data **(col: 1 line: 20-25 "stale copy")**.

Sharma discloses: 10. The method of claim 9, wherein said conditions indicating that said event should not be generated by said agent comprise said agent receiving a snoop response containing modified data **(col: 1 line: 23-25; col: 2 line: 31-37)**.

Sharma discloses: 11. The method of claim 1 said verifying comprising: detecting said event at an output of said agent; and checking said expectation to verify whether said agent correctly generated said event **(Fig 5 item 550 505, 510, 545. 555 and Figure's descriptions)**.

Sharma discloses: 12. The method of claim 1, said verifying comprising: detecting an outgoing event at an output of said agent; and checking a list of expectations of events to verify whether said agent correctly generated said outgoing event **(col: 7 line: 15-20; Fig 5 item 550 505, 510, 545. 555 and Figure's descriptions)**.

Sharma discloses: 13. The method of claim 1, wherein said generation of said event is conditional, said method further comprising: detecting an outgoing event at an output of said agent; and storing an indication that said outgoing event occurred in said speculative expectation **(col: 7 line: 42-49)**.

Sharma discloses: 14. The method of claim 13, further comprising: detecting information at said input of said agent indicating that said event corresponding to said speculative expectation should not be generated by said agent; and signaling an error indicating that said outgoing event should not have occurred **(col: 7 line: 15-20; Fig 5 and description)**.

As per claims 15-16, 19-20, note the rejection of claims 1, 2, 8 above. The Instant Claims recite substantially same limitations as the above-rejected claims and therefore rejected under same prior-art teachings.

Sharma discloses: 18. The apparatus of claim 15, wherein said condition is not satisfied if said memory agent receives a modified copy of requested data **(col: 1 line: 20-25)**.

Support for Amendments and Newly Added Claims

Applicants are respectfully requested, in the event of an amendment to claims or submission of new claims, that such claims and their limitations be directly mapped to the specification, which provides

support for the subject matter. This will assist in expediting compact prosecution. MPEP 714.02 recites: "Applicant should also specifically point out the support for any amendments made to the disclosure. See MPEP § 2163.06. An amendment which does not comply with the provisions of 37 CFR 1.121(b), (c), (d), and (h) may be held not fully responsive. See MPEP § 714." **Amendments not pointing to specific support in the disclosure may be deemed as not complying with provisions of 37 C.F.R. 1.131(b), (c), (d), and (h) and therefore held not fully responsive.** Generic statements such as "Applicants believe no new matter has been introduced" may be deemed insufficient.

Conclusion

13. All claims are rejected.

14. The Instant Application is not currently in condition for allowance.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application

Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kamini S Shah/

Supervisory Patent Examiner, Art Unit 2128

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